

Somatic Symptoms, but Not Nonsomatic Symptoms, of Depression are Associated with Insulin Resistance: National Health and Nutrition Examination Survey (NHANES) 2005-2010

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While there is a well-established link between depression and type 2 diabetes, depressive symptoms have received little attention in this literature. To begin to address this gap, we examined relationships among the somatic and nonsomatic symptoms of depression and insulin resistance, which is involved in the development of type 2 diabetes. Participants were 4,834 adults (mean age = 44.3 years, 50% female, 19% African American, 20% Mexican American) who participated in the 2005-2010 waves of NHANES – a survey of a large representative sample of the U.S. population. Participants with the following conditions were excluded: diabetes, cardiovascular disease, liver disease, kidney disease, or pregnancy. Depressive symptoms were measured using the Patient Health Questionnaire (PHQ-9), and somatic and nonsomatic subscales were derived based on confirmatory factor analysis. Our index of insulin resistance was the homeostatic model assessment (HOMA) score, which we computed from fasting plasma glucose and insulin levels. Separate regression analyses (adjusted for age, sex, race-ethnicity, education, BMI, and NHANES sample design) demonstrated positive relationships between PHQ-9 total ( $B=0.04$ ,  $SEB=0.01$ ,  $p<0.0001$ ), somatic ( $B=0.07$ ,  $SEB=0.02$ ,  $p=0.0004$ ), and nonsomatic ( $B=0.06$ ,  $SEB=0.02$ ,  $p=0.0004$ ) scores and HOMA score. When the subscales were entered simultaneously into a regression model, the somatic score ( $B=0.05$ ,  $SEB=0.02$ ,  $p=0.03$ ), but not the nonsomatic score ( $B=0.03$ ,  $SEB=0.02$ ,  $p=0.06$ ), remained associated with HOMA score. A significant interaction was found for race-ethnicity, and further analyses demonstrate that the somatic symptoms of depression are only significantly associated with HOMA among Caucasians ( $B=0.07$ ,  $SEB=0.02$ ,  $p=0.02$ ). Our cross-sectional findings suggest that the relationship between depression and insulin resistance may be driven by the somatic symptoms of depression and that this relationship may only be present only occur in Caucasians. The findings suggest that Caucasian adults with the somatic symptoms of depression may be at an elevated risk of type 2 diabetes.

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